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COUDERT BROTHERS LLP 333 SOUTH HOPE STREET 23RD FLOOR LOS ANGELES, CA 90071			LAY, MICHELLE K	
			ART UNIT	PAPER NUMBER
			2672	

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/791,972		SCHKOLNE ET AL.	
	Examiner		Art Unit	
	Michelle K. Lay		2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-162 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-162 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

By

DETAILED ACTION

Claim Objections

1. Claim **75** is objected to because of the following informalities: The term “create” should be changed to “draw” to follow claim 74’s preamble. Furthermore, an apparatus cannot not “create” a virtual object per say, but “generate” a virtual object. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims **18, 19, 43, 44, 64, 65, 104-107**, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of embedding one or more sensors within a virtual component in claims **18, 43, 64, 104** is not supported by the specification. Paragraph [0069] teaches embedding sensors in the tool itself; however, the specification does not disclose embedding sensors within a virtual component. Furthermore, it is unclear how sensors

would be embedded in a virtual component considering sensors are real and the component is virtual.

3. Claims **111**, **121-126**, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of the virtual deformation tool being used to deform the geometry of the virtual component in claim **111** is not supported by the specification. Paragraph [0015] teaches the virtual component is a software representation of a physical component. Furthermore, paragraphs [0119]-[0121] teaches the virtual deformation tool's function is to deform regions of three-dimensional virtual objects, not the virtual component. Thusly, it is unclear how and why the virtual deformation tool deforms itself.

4. Claims **112**, **127-133**, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of the virtual smoothing tool being used to smooth the geometry of the virtual component in claim **112** is not supported by the specification. Paragraph [0015] teaches the virtual component is a software representation of a physical component. Furthermore, paragraphs [0122]-[0124] teaches the virtual smoothing tool's function is to smooth regions of three-dimensional virtual objects, not the virtual component. Thusly, it is unclear how and why the virtual smoothing tool smooths itself.

5. Claims **113**, **134-140**, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of the virtual spray-painting tool being used to spray said virtual component with virtual paint in claim **113** is not supported by the specification. Paragraph [0015] teaches the virtual component is a software representation of a physical component. Furthermore, paragraphs [0125]-[0127] teaches the virtual painting tool's function is spray various colors of virtual paint onto regions of three-dimensional virtual objects, not the virtual component. Thusly, it is unclear how and why the spray-painting tool sprays virtual paint on itself.

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6. Claims **114**, **141-147**, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of the virtual texture creation tool being used to spray a texture on the virtual component in claims **114** is not supported by the specification. Paragraph [0015] teaches the virtual component is a software representation of a physical component. Furthermore, paragraphs [0016] briefly mention the texture creation tool's function is to "spray" spray texture onto a three-dimensional virtual objects, not the virtual component, but does not provide any further details. Thusly, it is unclear how and why the virtual texture creation tool sprays a texture on itself.

7. Claim **162** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitation of *more than* 6 degrees of freedom in claim **162** is not supported by the specification. Even though paragraphs [0041], [0042], and [0111] refer to more than 6 degrees of freedom, it unclear from applicant's disclosure as to what the other degrees of freedom pertain to.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

8. Claim **4** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **4** recites the limitation "software" in line 1. However, the software alone cannot perform the operation without a computer, which has not been claimed in the independent or depending claims. There is insufficient antecedent basis for this limitation in the claim.

9. Claims **16, 41, 62** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims **16, 41, 62** recite the limitation "lack of virtual depiction". It is unclear how a virtual component can lack virtual depiction since the virtual component is depicted on the display. There is insufficient antecedent basis for this limitation in the claim.

10. Claims **18, 19, 43, 44, 64, and 65** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims **18, 43, 64** recite the limitation "embedding one or more sensors within a virtual component" in lines 1-2. However, it is unclear how sensors would be embedded in a virtual component

considering sensors are real and the component is virtual. There is insufficient antecedent basis for this limitation in the claim.

11. Claims **23, 48, 69** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims **23, 48, 69** recite the limitation "buttons, joysticks, scroll wheels, or foot pedals embedded in said virtual component" in lines 1-2. However, it is unclear how buttons, joysticks, scroll wheels, or foot pedals would be embedded in a virtual component considering buttons, joysticks, scroll wheels, or foot pedals are real and the component is virtual. There is insufficient antecedent basis for this limitation in the claim.

12. Claims **74-78, 81-97** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims **74, 81, 84, 87, 95** recite the limitation "coincidentally" in line 4. It is unclear what this term means in regards to how the two input devices are used in conjunction with each other. There is insufficient antecedent basis for this limitation in the claim.

Claim **75** recites the limitation "said grabbing tool" and "said pointing tool" in line 3. No grabbing tool or pointing tool has been described in the independent claim to understand what "said grabbing tool" or "said pointing tool" pertains to. There is insufficient antecedent basis for this limitation in the claim.

Additionally, claims **92-94** recites the limitation “virtual object”. However, as understood from the claims as well as the specification, the “virtual object” is the object displayed on the screen where the “virtual component” as related to the input device acts on. Thus, is the “virtual object” claimed in claims 92-94 really the “virtual component” of the physical input device? There is insufficient antecedent basis for this limitation in the claim.

13. Claims **79, 80** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **79** recites the limitation “said grabbing tool”, “said gripping tool” and “said pointing tool” in line 4. There is insufficient antecedent basis for this limitation in the claim.

14. Claims **102-109** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **102** recites the limitation “iconic virtual component only” in line 3, “virtual component only” in line 6 and “a virtual component lacking virtual depiction” in line 7. It cannot be ascertained as to what the scope of the claim is. The term “only” provides a contradiction of the limitations. Is the iconic virtual component a separate entity along with the virtual component, and does the iconic virtual component and virtual component have additional components? Furthermore, it is unclear how a virtual component can lack virtual depiction since the virtual

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component is depicted on the display. There is insufficient antecedent basis for this limitation in the claim.

Additionally, claim **104** recites the limitation "embedding one or more sensors within said virtual component" in lines 1-2. It is unclear how sensors would be embedded in a virtual component considering sensors are real and the component is virtual. There is insufficient antecedent basis for this limitation in the claim.

15. Claims **111, 121-126**, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **111** recites the limitation "said tool is used to deform the geometry of said virtual component" in lines 1-3. However, it is unclear how the deformation tool deforms itself. There is insufficient antecedent basis for this limitation in the claim.

16. Claims **112, 127-133**, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **112** recites the limitation "said tool is used to smooth a surface said virtual component" in lines 1-3. However, it is unclear how the smoothing tool smoothes a surface of itself. There is insufficient antecedent basis for this limitation in the claim.

17. Claims **113**, **134-140**, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **113** recites the limitation "said tool is used to spray said virtual component with virtual paint" in lines 1-3. However, it is unclear how the spray-painting tool sprays virtual paint on itself. There is insufficient antecedent basis for this limitation in the claim.

18. Claims **114**, **141-147**, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **114** recites the limitation "said tool is used to spray a texture on said virtual component" in lines 1-3. However, it is unclear how the texture creation tool sprays a texture of itself. There is insufficient antecedent basis for this limitation in the claim.

19. Claim **159** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **159** recites the limitation "said handle" in line 1. There is insufficient antecedent basis for this limitation in the claim.

20. Claim **162** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim **162** recites the limitation "more than 6 degrees of

freedom". It is unclear what the other degrees of freedom pertain to. There is insufficient antecedent basis for this limitation in the claim.

No prior art rejections have been made on claims **16, 23, 41, 48, 62, 69, 74-80, 94, 102-109** due to the unclear scope and severity of the 35 U.S.C. 112, second paragraph rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-4, 8, 28-31, 33, 34, 41, 53-55, 57, 58, 62, 81-87, 110, 115-117, 148-151, 154-161** are rejected under 35 U.S.C. 102(b) as being anticipated by Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches a method and apparatus for inputting position, attitude (orientation) or other object characteristic data to computers for the purpose of Computer Aided learning, Teaching, Gaming, Toys, Simulations, Aids to the disabled, Word Processing and other applications.

21. In regards to claims 1, 161 –

Fig. 1a shows the basic invention of Pryor. A user (5), desires to point at an object (6) represented electronically on the screen (7) and cause the pointing action to register in the software contained in computer (8) with respect to that object (a virtual object), in order to cause a signal to be generated to the display (7) to cause the object to activate or allow it to be moved (e.g., with a subsequent finger motion or otherwise) (claim 1: ***generating one or more interface devices to alter and generate one or more two-dimensional or three-dimensional virtual objects***) [0109]. This system can provide highly accurate position and orientation information in up to 6 degrees of freedom (claim 1: ***wherein said devices can control N degrees of freedom of said virtual objects***; claim 161: ***wherein N degrees of freedom is 6 degrees of freedom***) [0134].

Furthermore, the invention of Pryor can “alias” the interface devices, such as represent the input device, such as a pen, as a paintbrush on the screen (7) (claim 1: ***providing one or more three-dimensional virtual tools to a user for said spatial manipulation or said two-dimensional or said three-dimensional entertainment***) [0275]. Fig. 9 illustrates a means for aiding the movement of a person's hands while using the invention of Pryor in multiple degrees of freedom movement. Shown in Fig. 9a, joystick (905) has ball (910) attached to it's end in which the data from datums on the ball position is taken optically by a video camera in up to 6-axes [0382]. Two joysticks may be used (claim 1: ***generating one or more interface devices; associating said interface devices in conjunction with each other to alter one or more two-dimensional or three-dimensional virtual components***) [0383]. A joystick is often

used for game control (claim 1: ***providing a plurality of video game controllers to said user for spatial manipulation or said two-dimensional or said three-dimensional entertainment***) [0382].

22. In regards to claims 2, 3 –

Fig. 1a shows the basic invention of Pryor. A user (5), desires to point at an object (6) represented electronically on the screen (7) and cause the pointing action to register in the software contained in computer (8) with respect to that object (a virtual object), in order to cause a signal to be generated to the display (7) to cause the object to activate or allow it to be moved (e.g., with a subsequent finger motion or otherwise) (claim 2: ***said interface devices are digital input devices***) [0109]. The invention of Pryor permits the user to use a variety physical objects for the point action, where the sensors on the physical object are detecting by camera (10). The input device can even be the user's fingertip (12) (claim 3: ***said interface device are physical input devices***) [0109].

23. In regards to claim 4 –

The datums on an object can be known a priori relative to other points on the object, and to other datums, by providing it to a user via a CD ROM disc or other computer interface storage medium having this data [0143] (claim 4: ***virtual components are a software representation of physical input devices***).

24. In regards to claims **8, 28, 53, 57, 148-150** –

Fig. 6 illustrates other movements such as gripping or touching. Parts of the user such as the hands (**said interface device**), can describe motion or position signatures and sequence of considerable utility, e.g., grip, pinch (claims **8, 148: said interface devices is a grabbing tool**), grasp (claim **53: said interface devices is a gripping tool**), stretch, bend, twist, rotate (claim **149: wherein said grabbing controller is used to rotate said one or more virtual objects**), screw, point (claim **28: said interface device is a pointing tool**), hammer, throw [0331]. These actions can cause objects depicted on a screen to be acted on, by sensing the users hand relative to the human or the computer camera system or the screen [0333]. Furthermore, as an example, if the hand (**said interface device**) is pulled away with in a certain time, it is interpreted to be a grasp, and the cow object (610) is moved to a new location on the screen where the user deposits it, for example, at position (650) (claim **57: wherein a first function of said gripping tool is to place said virtual objects in a 3D space**; claim **150: wherein said grabbing controller is used to move said one or more virtual objects**) [0334].

25. In regards to claims **29, 30** –

As shown in Fig. 15, the input device controlled by the user (1549) may be a toy pistol (1550) (claim **29: said pointing tool has a physical form resembling a firearm**; claim **30: said firearm is a gun**) [0447].

26. In regards to claim 31 –

Referring to Fig. 13, a laser pointer (1320) can be used to obtain multiple points (claim 31: ***said pointing tool has a physical form resembling a laser pointer***) [0430].

27. In regards to claim 33 –

As shown in Fig. 6, the users hand can describe motion or position signatures and sequence of considerable utility, such a pointing (claim 33: ***said pointing tool has a physical form resembling a pointing hand***) [0331].

28. In regards to claim 34 –

Prior teaches that the targeted tools could be simple targeted sticks (claim 34: ***said pointing tool has a physical form resembling a stick***) [0271].

29. In regards to claims 54, 55 –

Fig. 15 illustrates a sword play video game. As shown, player (1501) holds sword (1502) [0042]. This sword has a handle (claim 54: ***said gripping tool has a physical form resembling a handle***; claim 55: ***said handle is a sword handle***).

30. In regards to claims 58, 157-159 –

As shown in Fig. 3b, the user can pick up the tool (small paintbrush, large paintbrush, pen, pencil, etc.) (***said gripping tool***) and draw over the surface of a sheet of paper, surface of the display screen, or projection of computer display (claim 157:

said controllers is a drawing controller, wherein said controller is used to draw a stroke in said entertainment environment). The application software would not only trace the path of the tip of the targeted work tool, but also treat the tool as though it were a pen or paintbrush, etc., where the characteristics of the tool is found in the associated database [0274]. Furthermore, by drawing directly on a computer display or transparent cover over a computer display, the user can make the targeted tool (e.g. pen, paintbrush) manipulate the computer display and immediately get feedback on how the graphics are affected (claim 58: **second function of said gripping tool is to draw one or more paths between two or more said virtual objects**; claim 158: **wherein said stroke is drawn freehand by said user in said entertainment environment**) [0279]. In regards to claim 159, the tool, e.g., small, paintbrush, large paintbrush, would have a handle for the user to grasp in order to draw over the surface of a sheet of paper, surface of the display screen, or projection of computer display (claim 159: **wherein said stroke is drawing using said handle by said user in said entertainment environment**).

31. In regards to claims 110, 115-117 –

Referring to Fig. 3, Pryor uses the example of an artist with tools, such as an eraser (claim 110: **said 3D virtual tool is an eraser tool, wherein said tool is used to remove a region of a virtual surface**) [0274]. The artist would pick up the tool and normally use the tool over the surface of a sheet of paper, display screen or projection of computer display. The application software would not only trace the path of the tip of

the targeted work too, but also treat the tool as though it were the object, i.e. eraser.

The exact characteristics would be found in the associated database. Extra parameters, such as the width of the line (claim 117) or color (claim 136) could be determined by keyboard input (*plurality of controls, buttons*) (claim 115: *said tool has a plurality of controls to activate one or more functions*; claims 116: *wherein said plurality of controls comprises buttons, joysticks, scroll wheels, or foot pedals embedded in said tool*, claim 117: *wherein one of said functions is to change a size of a default erasing region*) [0274].

32. In regards to claim 151, 154-156–

Fig. 15 shows a sword (claim 151: *wherein said controllers is a slicing controller*) and pistol game (claim 154: *said controllers is a pointing controller*) where the players (1501) (1549) may use a toy pistol (1550) or sword (1502) that is viewed by stereo camera system (1510) [0447]. It is noted that both the sword and pistol is typically pointed at the screen [0453]. The player's hand (1575) or holster (1520) and pistol (1585) or sword (1502) may be targeted with one or more targets. On the screen in front of the player is a video display of the OK corral (and/or other imagery related to the game) with "bad guys" such as represented by computer graphics generated image (1535) [0447]. To play the game, the player draws his gun or sword when a bad guy draws his and shoots (claim 154: *wherein said controller is used to shoot said one or more virtual objects*; claim 155: *wherein said pointing controller is used to select said one or more virtual objects in said entertainment*

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environment) or attacks, such as slicing [0448]. The computer game software controls the “bad guys” (1535) coming in to view or leaving the scene [0447]. Thus, when the player shoots or attacks the “bad guys” (1535), the computer game software removes the “bad guys” (1535) from view, i.e., rearranging or relocating the virtual objects (claim 151: *wherein said controller is used to slice and relocate said one or more virtual objects in said entertainment environment*; claim 156: *said pointing controller is used to grab or rearrange said one or more virtual objects in said entertainment environment*).

33. In regards to claim 160 –

Fig. 4 illustrates a car driving game. Target (420) is placed on the steering while which can be seen by stereo pair of cameras (405) and (406). As the wheel is turned, the target moves in a rotary motion that can be transduced accordingly, or as a compound x and y motion by the camera processor system means in computer (411). The target (420) can alternatively be attached to any object that we chose to act as a steering wheel (421) such as the wheel of a child’s play dashboard toy (425) (claim 160: *wherein one of said controllers is a navigation controller, wherein said controller is used to navigate said user in said entertainment environment*) [0294].

34. In regards to claims 81-87 –

Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions

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of this type are grip, pinch, grasp (claim 83: ***grabbing a first extremity***), stretch (claim 85: ***stretch said virtual object***), bend, twist (claim 86: ***twist said virtual object***), rotate (claim 82, 83: ***rotate said virtual object***), screw, point, hammer, throw, and other natural actions learned in life (claim 81: ***change placement of a virtual object***, claim 84: ***deform a virtual object***) [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands (claims 81, 84, 87: ***using two or more of said physical input devices coincidentally***), or relative motion/position of any of the above with respect to the human or the computer camera system or the screen [0333]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, two hands can be used where one hand performs one action, such as grabbing (claims 83, 86: ***grabbing with said first grabbing tool***), while the second hand performs a second action, such as rotating (claim 83: ***rotating with grabbing tool***) or twisting (claim 86: ***twisting with grabbing tool***).

35. In regards to claims 90, 91 –

Fig. 15 shows a sword and pistol game where the players (1501) (1549) may use a toy pistol (1550) (claim 91: ***pointing tool***) or sword (1502) (claim 91: ***grabbing tool***) that is also viewed by stereo camera system (1510) [0447]. It is noted that both the sword and pistol is typically pointed at the screen (claim 90: ***using two or more of said physical input devices coincidentally***) [0453]. The player's hand (1575), holster (1520) and pistol (1585) or sword (1502) may be targeted with one or more targets. On

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the screen in front of the player is a video display of the OK corral (and/or other imagery related to the game) with "bad guys" such as represented by computer graphics generated image (1535) [0447]. To play the game, the player draws his gun or sword when a bad guy draws his and shoots or attacks, such as slicing [0448] (claim 90: ***specifying a point***, claim 91: ***using a first pointing tool and a second grabbing tool to specify a point***). The computer game software controls the "bad guys" (1535) coming in to view or leaving the scene [0447]. Thus, when the player shoots or attacks the "bad guys" (1535), the computer game software removes the "bad guys" (1535) from view.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

36. Claims **9-12, 32, 35-37, 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims **9-12, 35-37, 56** with the exception of disclosing the grabbing tools (claims **9-12**), pointing tools (claim **33, 35-37**), and gripping tools (claim **56**) resembling specific physical forms. However, Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices.

With the aid of Fig. 6, Pryor teaches the act of grabbing where the thumb (601) and the first finger (602) are near an object such as a 3D graphic rendition of a cow (610) displayed on the screen (615). As the fingers are converged in a pinching motion depicted as dotted lines (620), the program of computer (630) recognizes this motion of fingernails (635) and (636) seen by cameras (640) and (641) connected to the computer which processes their image, as a pinch/grasp motion and can either cause the image of the cow to be compressed graphically [0334]. Although Pryor is silent about other grabbing tools, Pryor discloses using retro-reflective material [0111] or targets [0113] adhered to input devices. Therefore, such material can be adhered to kitchen tongs, pincers, scissors, and or tweezers that mimic the same pinching motion as the thumb (601) and first finger (602) (claims **9-12**).

Parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility, such as pointing [0331]. This action can cause objects depicted on a screen to be acted on, by sensing [0334]. Thus, similar to the grabbing tools, the retro-reflective material [0111] or targets [0113] can be adhered to input devices, such as a flash light, spray-paint can or camera to mimic the same pointing motion as the user's finger (claims **33, 35, 36**).

As shown in Fig. 15, the input device controlled by the user (1549) may be a toy pistol (1550) [0447]. Although Pryor is silent about using a glue-gun as a pointing device, it would have been obvious to interchange the toy-pistol with a glue-gun by again, using the retro-reflective material [0111] or targets [0113] to mimic the same point motion as the user's fingers (claim **37**).

Additionally, parts of the user, such as the hands, can describe motion or position signatures and sequences of considerable utility, such as gripping or grasping [0331].

Fig. 15 illustrates a sword play video game. As shown, player (1501) holds sword (1502) [0042]. This sword has a handle. The retro-reflective material [0111] or targets [0113] can be adhered to input devices, such as a shovel handle to mimic the same gripping or grasping motion as the user's hand with the sword (claim 56) (1502).

These tools can be considered targeted tools, where a targeted work tool can be a toy model of the real world tool or the tool itself, helping the user immediately visualize the properties of the tool in the computer program [0236]. Thus, it would have been obvious to use such physical items in order to provide a realistic simulation of the users motion in regards to the graphic rendition on the screen (615).

37. Claims 88, 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims 88, 89 with the exception of modifying an axis of rotation. However, Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend, twist, rotate (claims 88, 89: **rotate said virtual object**), screw, point, hammer, throw, and other natural actions learned in life (claim 89: **using tools to move virtual component to a desired location**) [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands (**using two or more**

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of said physical input devices coincidentally), or relative motion/position of any of the above with respect to the human or the computer camera system or the screen [0333]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, two hands can be used where one hand performs one action, such as grabbing (claim 89: **grabbing with said first grabbing tool**), while the second hand performs a second action, such as rotating (claim 89: **rotating with grabbing tool**). Although Pryor is silent about an axis of rotation, and axis of rotation would be needed for the user to rotate the virtual object. Furthermore, the invention of Pryor permits the virtual object to be moved or altered in position. Thus, when the virtual object's position has been altered, either rotated a certain degree, etc., the axis of rotation as then been modified (claim 88: **modify an axis of rotation**).

38. Claims 92, 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims 92, 93 with the exception of denoted a point by intersecting virtual objects and the pointing tools being laser beams. However, from the rationale of claim 90, it would have been obvious that a point would be created if the "bad guys" of the video game illustrated in Fig. 15 were to overlap (claim 92: **interesting first and second virtual objects to denote said point**). Additionally, in one embodiment of Pryor, Pryor teaches using a laser [0642]. In conjunction with the rationale of claim 90, Pryor teaches "aliasing" objects as other objects [0281]. Thus, it would have been obvious to one of ordinary skill in the art to alias the laser as a device

with properties for the entertainment environment (claim **93: *said first and second point tool resembles a laser beam***).

39. Claims **95-97** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims 95-97 with the exception of disclosing an input device to cut a virtual object. However, Fig. 6 illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp (claim 97: ***grab virtual object***), stretch (claim 97: ***length virtual object***), bend, twist, rotate, screw, point, hammer, throw, and other natural actions learned in life [0331]. The method and system of Pryor detects the position of one finger, two fingers of one hand, one finger of each hand, two hands (claim **95: *using two or more of said physical input devices coincidentally***), or relative motion/position of any of the above with respect to the human or the computer camera system or the screen [0333]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, two hands can be used where one hand performs one action, such as grabbing, while the second hand performs a second action, such as lengthening.

Additionally, as shown in Fig. 15, a sword video game can incorporate the method of Pryor. It would have been obvious to one skilled in the art that the sword (1502) held by player (1501) can virtually cut the "bad guys" within the game [0441]-[0442].

Furthermore, Pryor teaches that the invention allows the user to “alias” any object with any other object [0281]. Thus, the hands of the user can be aliased as a sword that can cut the virtual objects (claims 96, 97: ***cut virtual objects***).

40. Claims 152, 153 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1).

Pryor teaches the limitations of claims 152 and 153 with the exception of teaching using a handle with a laser beam as a slicing controller. However, in one embodiment of Pryor, Pryor teaches using a laser [0642]. In conjunction with the rationale of claim 151, Pryor teaches “aliasing” objects as other objects [0281]. Thus, it would have been obvious to one of ordinary skill in the art to alias the laser as a sword in the sword game described via Fig. 15 if a sword is not available (claim 152: ***said slicing controller's physical shape is a handle and one of its virtual component is a laser beam***).

Furthermore, in regards to claim 153, Fig. 6 of Pryor illustrates parts of the user, such as the hands can describe motion or position signatures and sequences of considerable utility [0330]. Some natural actions of this type are grip, pinch, grasp, stretch, bend, twist, rotate, screw, point, hammer, throw, and other natural actions learned in life [0331]. These actions can cause objects depicted on the screen to be acted on [0334]. Thus, as in the rationale of claim 152, the handle shaped slicing controller as claimed can be aliased as the hands described in Fig. 6, to perform the same functions of dropping objects (claim 153: ***said handle shaped slicing controller is used to drop objects***).

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41. Claims **5-7, 13-15, 17, 20, 21, 38-40, 42, 45, 46, 59-61, 63, 66, 67** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1) in view of Harvill et al. (US Patent No. 6,222,523 B1).

Pryor teaches the limitation of claims **5-7, 13-15, 17, 20, 21, 38-40, 42, 45, 46, 59-61, 63, 66, 67** with the exception of teaching the virtual component coinciding with the tool's physical form. However, Harvill et al. attaching a tactile stimulus to the users body when a virtual operator, created by movements of the physical operator, encounters a virtual object defined by a computer.

Referring to Fig. 6 of Pryor, Fig. 6 illustrates other movements such as gripping or touching. Parts of the user such as the hands (claims **15, 17, 40, 42, 61, 63: *said tool***), can describe motion or position signatures and sequence of considerable utility, e.g., grip, pinch (claims **15, 17: *grabbing tool***), grasp (claim **61, 63: *gripping tool***), stretch, bend, twist, rotate, screw, point (claim **40, 42: *pointing tool***), hammer, throw [0331]. These actions can cause objects depicted on a screen to be acted on, by sensing the users hand relative to the human or the computer camera system or the screen (claim **20, 45, 66: *said controlling position comprises integrating said virtual component within environment***, claim **21, 46, 67: *said controlling environment is a camera***) [0333].

Fig. 1 of Harvill et al. is an overall perspective view of a data processing system (4) wherein movements of a part of a physical body (10) of an operator (12) are converted into a virtual operator (16) (claims **13, 38, 59: *virtual form of said tool is an iconic virtual component***) for manipulating a virtual object (20) represented within data

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processing system (4) [col. 2, lines 65 – 68; col. 3 lines 1 – 4]. As seen, the virtual operator (16) takes the form of the input device, i.e. the hand of the operator (10) (claims 14, 39, 60: ***virtual form of said tool is a first iconic component coupled with a second virtual component that coincides with said tool's physical form***; claims 15, 40, 61: ***virtual form of said tool is a virtual component coinciding with said tool's physical form***). As seen, the virtual form takes the shape of a 2D object (claim 5: ***virtual component is a 2D GUI***, claim 7: ***virtual component is a cursor***). The movements of a hand (22) of physical operator (12) are converted into a virtual operator (16) through a glove (24). Thus, as the hand (22) moves, the virtual operator (16) mimics the movements on the display (claims 17, 42, 63: ***altering the relationship between said tool and its corresponding 3D virtual component, mapping said tool to said corresponding virtual component***). It would have been obvious to one of ordinary skill in the art to have the virtual form also take a 3D shape since the data processing system (4) converts the movements of a physical body (10) of an operator (12) and the movements are within a 3D space (claim 6: ***virtual component is a 3D GUI***). As shown in Fig. 2 of Harvill et al., a programmable interval timer (28) receives data from a CPU (32) of data processing system (4) through a bus (36). Internal timer 928) provides a signal to a stimulus circuit (40) through a bus (44) whenever virtual operator (16) encounters virtual object (20) (claims 17, 42, 63: ***controlling position of said corresponding virtual component to one of said virtual objects***) [col. 3, lines 15 – 22]. Although Harvill et al. is silent about generating an iconic form when the virtual component is close enough to react with the virtual objects, the virtual operator

(16) reacts with the virtual object (20), thus altering its state when near the virtual object (20) (claims 17, 42, 63: ***generating an iconic form when corresponding virtual component is close enough to react to virtual objects***).

Therefore, it would have been obvious to one of ordinary skill in the art to include the conversion method of Harvill et al. to display a virtual operator coinciding with the physical form of the input device of Pryor so the user can visually see the relationship between the input device and the virtual object on the screen, providing an easier means of manipulations of the virtual object on the screen.

42. Claims 22, 24-27, 47, 49-52, 68, 70-73, 98-101, 118-120 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pryor (US Publication No. US 2002/0036617 A1) in view of Kumar et al (US Patent No. 6,222,465 B1).

Pryor teaches the limitations of claims 22, 24-27, 47, 49-52, 68, 70-73, 98-101, 118-120 with the exception of disclosing a virtual menu. However, Kumar et al. teaches a system and method for manipulating virtual objects in a virtual environment where the user can select options for a menu.

Referring to Fig. 6 of Pryor, Fig. 6 illustrates parts of the user such as the hands, can describe motion or position signatures and sequence of considerable utility, e.g., grip, pinch, grasp, stretch, bend, twist, rotate, screw, point, hammer, throw [0331]. These actions can cause objects depicted on a screen to be acted on, by sensing the users hand relative to the human or the computer camera system or the screen [0333]. Furthermore, Pryor allows the user to "alias" any object with any other object (claim 98:

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virtual components) [Pryor: [0281]. It would have been obvious that the first action mode as disclosed in claims **26, 51, 72, 120** is the function of the aliased object corresponding to the function of the object that it is aliased of, e.g. if a finger is aliased as a pencil, the finger's first action mode is to draw like a pencil (claims **26, 51, 72, 120: wherein said first action mode is a default action mode**).

Similarly, Kumar et al. teaches a system and method for manipulating virtual objects in a virtual environment, for drawing curves and ribbons in the virtual environment, and for selecting and executing commands for creating, deleting, moving, changing, and resizing virtual objects (claim **100: change said plurality of virtual components**) in the virtual environment using intuitive hand gestures and motions [col. 1, lines 65-68; col. 2, lines 1-4]. Referring to Fig. 6 of Kumar et al., when the active gesture (42) is presented (claims **22, 47, 68: plurality of controls to activate one or more functions**; claims **99, 101: virtual menu activated**), a main control menu is displayed on the display unit (12) in the virtual environment (60). An exemplary main control menu (100) and a variety of exemplary sub-menus (200)-(400) for invoking different modes of operation of the system (8) are shown (claims **24, 49, 70, 118: virtual menu consisting of one or more choice for said user to choose from**) [col. 5, lines 17-23]. Furthermore, the exemplary sub-menus (200)-(400) would allow the user to alter the functions of the virtual components (claims **25, 50, 71, 119: toggle between a first action and a second action**). The main menu (100) includes menu commands that corresponds to a particular mode of the system (8) (claim **98: using a virtual menu to map**) [col. 5, lines 29 – 31].

Therefore, it would have been obvious to one of ordinary skill in the art to include the virtual menu of Kumar et al. with the manipulation of virtual objects method and system of Pryor because the method and system of Pryor allows the user to "alias" any object with any other object [Pryor: [0281]]. Thus, virtual menus would be ideal so the user can choose from options to alias the object.

43. In regards to claims **27, 52, 73**

The invention of Pryor uses weapons, such as swords and pistols as shown in Fig. 15. With the combined invention of Pryor in view of Kumar et al., it would have been obvious that the virtual menu of Kumar et al. provide the option to choose from a plurality of virtual weapons since games involving weapons makes use of the invention of Pryor. Furthermore, objects can be aliased [Pryor [0281]], thus optional and additional weapons besides the virtual component of the physical input device can be used within the game of Pryor allowing for customization within the game [Pryor [0441]-[0455]].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kobayashi et al. (US Patent No. 6,628,264 B1)

Harvill et al. (US Patent No. 5,986,643)

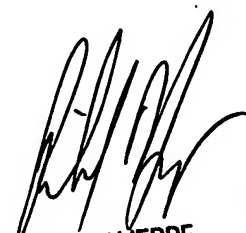
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday - Friday, 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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